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10/035,455	11/01/2001	Gregory R. Shaw	12648US02	4484

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EXAMINER	
TRAN, CON P	

ART UNIT	PAPER NUMBER
2615	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/035,455	SHAW ET AL.	
	Examiner	Art Unit	
	CON P. TRAN	2615	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 February 2008*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-24* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-24** are rejected under 35 U.S.C. 103(a) as being unpatentable over Marash U.S. Patent 6,198,693.

Regarding **claim 1**, Marash teaches a method of artifact rejection (see Fig. 6A, and respective portions of the specification, col. 9, lines 16-32) comprising:

(a) receiving a signal (at block 61);

(b) picking noise component and a signal component (select minimum signal power as noise power);

(c) calculating a noise power from the noise component (block 61);

(d) based on the calculated noise power, storing the noise component in one of a plurality of noise buffers (selection schemes may be stored in computer

memory, col. 6, lines 60-62) and the signal component in a corresponding one of a plurality of signal buffers (such as in 2 seconds);

(e) repeating steps (a) through (d) (i.e., over a predetermined interval such as in 2 seconds);

(f) selecting noise buffer (i.e., block) having a lowest noise power (block 62);

(g) calculating a signal power from signal buffers corresponding to the selected combination of noise buffers (i.e., over a predetermined interval such as in 2 seconds); and

(h) calculating a signal to noise ratio from the signal power and the lowest noise power (block 63, Fig. 6A, col. 9, lines 16-32).

Marash does not explicitly disclose splitting the signal into a noise component and a signal component in order to pick the noise power; a combination of the plurality of buffers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, those of ordinary skill in the art when facing a design need of determining noise power would have recognized and would have split the signal, and a combination of the plurality of buffers taught by Marash into noise component and signal component as claimed for purpose of being computationally efficient, as suggested by Marash in column 3, lines 38-39. For further clarification, it would have

been obvious to try since there are a number of identified, predictable solutions (e.g., other convenience ways, see col. 9, lines 23-24) to the recognized need.

Regarding **claim 2,** Marash further teaches the method of claim 1 further comprising counting the number of noise and signal components stored in each of the plurality of noise buffers and signal buffers, respectively (selection schemes may be stored in computer memory, col. 6, lines 60-62).

Regarding **claim 3**, Marash further teaches the method of claim 1 further comprising comparing the calculated signal to noise ratio to a predetermined value (block 64, Fig. 6A).

Regarding **claim 4,** Marash further teaches the method of claim 3 further comprising performing a function (e.g., validate) if the calculated signal to noise ratio is greater than the predetermined value (block 64, Fig. 6A).

Regarding **claim 5,** Marash further teaches the method of claim 3 further comprising performing a function (e.g., invalidate) if the calculated signal to noise ratio is greater than the predetermined value (block 64, Fig. 6A).

Regarding **claim 6,** Marash further teaches the method of claim 1 wherein the signal comprises at least one response to at least one stimulus (e.g., sound wave, col. 5, lines 34-44), and each stimulus comprises a plurality of points (sampling points col. 7, lines 18-22).

Regarding **claim 7,** Marash teaches the method 6. Marash further teaches using Fast Fourier Transform (FFT, col. 10, lines 52-62) unit. However, Marash does not explicitly disclose wherein each stimulus comprises 1024 points.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, those of ordinary skill in the art when facing a design need of performing Fast Fourier Transform would have recognized, and would have calculated wherein each stimulus comprises 1024 points as claimed for purpose of being computationally efficient, as suggested by Marash in column 3, lines 38-39.

Regarding **claim 8,** Marash teaches the method 1. Marash further teaches calculating over a predetermined interval such as in 2 seconds (col. 9, lines 27-29) and selection schemes may be stored in computer memory (col. 6, lines 60-62).

However, Marash does not explicitly disclose wherein each of the plurality of noise and signal buffers respectively comprises eight buffers.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, those of ordinary skill in the art when facing a design need of

storage the values of noise power and signal power would have recognized and would have selected wherein each of the plurality of noise and signal buffers respectively comprise eight buffer as claimed for purpose of being computationally efficient, as suggested by Marash in column 3, lines 38-39.

For further clarification, it would have been obvious to try since there are a number of identified, predictable solutions (i.e., other convenience ways, see col. 9, lines 23-24) to the recognized need.

Regarding **claim 9,** Marash teaches the method of claim 1 wherein the method is employed in one of a DPOAE test, a TEOAE test, a BAER test, an ultrasound operation, an MRI operation, a RADAR operation, a GPS operation, an EEG operation, an EKG operation, or a communications operation (video conference, col. 1, lines 13- 19).

Regarding **claim 10,** Marash teaches the method of claim 1 wherein splitting the signal into a noise component and a signal component comprises taking the discrete Fourier transform of the signal (Fast Fourier Transform FFT, col. 10, lines 52- 62).

Regarding **claim 11,** Marash teaches the method 1. Marash further teaches calculating Fast Fourier Transform FFT, a set of frequency bins for storing the

frequency representation values divided into a set of frequency bands (col. 10, lines 52- 62). However, Marash does not explicitly disclose wherein seven different frequencies are employed.

It would have been obvious to one of ordinary skill in the art at the time the invention was made, those of ordinary skill in the art when facing a design need of calculating the frequency representation values would have recognized and would have selected wherein seven different frequencies are employed as claimed for purpose of being computationally efficient, as suggested by Marash in column 3, lines 38-39.

For further clarification, it would have been obvious to try since there are a number of identified, predictable solutions (set of frequency bands; col. 10, lines 52-62) to the recognized need.

Regarding **claim 12**, Marash further teaches the method of claim 1 wherein the signal comprises one of at least one stimulus or at least one response to at least one stimulus (e.g., sound wave, col. 5, lines 34-44).

Regarding **claim 13**, Marash further teaches the method of claim 1 further comprising, discarding the signal if the noise power of the noise component does not fit within an acceptable range of any of the plurality of noise buffers (block 64, Fig. 6A; see Abstract).

Regarding **claim 14,** this claim has similar limitations as Claim 1. Therefore it is interpreted and rejected under Marash for the reasons set forth in the rejection of Claim 1.

Regarding **claims 15-20,** these claims has similar limitations as Claims 2, 3, 4, 5, 2, 13 and 12, respectively. Therefore they are interpreted and rejected under Marash for the reasons set forth in the rejection of Claims 2, 3, 4, 5, 2, 13 and 12.

Regarding **claims 21-24,** these claims has similar limitations as Claims 1, 13. Therefore they are interpreted and rejected under Marash for the reasons set forth in the rejection of Claims 1 and 13.

Terminal Disclaimer

3. The terminal disclaimer filed on 02/14/2008 disclaiming the terminal portion of any patent granted on this application which would extend beyond the expiration date of Patent number 6,331,164 has been reviewed and is accepted. The terminal disclaimer has been recorded. Accordingly, the Double Patenting rejection is withdrawn.

Response to Arguments

4. Applicant's arguments filed February 14, 2008 have been fully considered but they are not persuasive.

5. Applicants assert on pages 10-12, regarding claim 1:

> "Marash therefore teaches assigning the lowest signal power over a predetermined interval to be the noise power, and thereby teaches away from the step of splitting a signal into a noise component and a signal component, as required by claim 1. . . . Marash therefore selects a single, lowest signal power and uses it as the noise power. Marash thereby teaches away from selecting a **combination** of a plurality of noise buffers having a lowest noise power, as required by claim 1. . . . . Marash simply uses the signal power of a **single**, current block to calculate the signal to noise ratio for that block. . . . Marash therefore teaches away from calculating a signal power from a **combination** of signal buffers, and then using the calculated signal power to calculate a signal to noise ratio, as recited in claim 1."

Examiner respectfully disagrees since there is no specific recitation in Marash that says that the signal could not be split, could not select a combination of a plurality of noise buffers having a lowest noise power, could not calculate a signal power from a combination of signal buffers, and then using the calculated signal power to calculate a signal to noise ratio. Furthermore, the claim does not specify how to "split" a signal into a noise component and a signal component. For further clarification, Marash teaches "The noise power can be measured in many ways" (see col. 9, lines 23-24) then discloses "one convenient way" to obtain noise power portion (i.e., signal block having the minimum power) and to obtain signal power portion (i.e., square-sum of the sampled signals within the block) of the signal in order to calculate signal-to-noise ratio. In other words, Marash teaches an alternative way of splitting the signal, calculating noise

power, calculating signal power for calculating signal-to-noise ratio. Marash teaches a way is not teach away.

Regarding Applicants' arguments of Claims 14 and 21, please see above response of Claim 1.

6. Applicants assert on page 16, regarding claim 7 (and any claim that includes the same or similar limitation):

> "Applicants submit that it is not common knowledge or well known in the art to provide a method of artifact rejection as claimed, wherein the signal comprises at least one response to at least one stimulus, and each stimulus comprises 1024 points. The Office Action stating that there may be "a design need of performing Fast Fourier Transform" and a "purpose of being computationally efficient" does not make the identified limitation common knowledge or well known in the art"

Examiner respectfully submitted evidence which is taught by John G. Proakis and Dimitris G. Manolakij in "Digital Signal Processing, Third Edition, Printice-Hall, New Jersey, 1996". As shown in Table 6.1, page 459, John G. Proakis and Dimitris G. Manolakij taught that at 1024 points the FFT speed improvement factor is 204.8 in comparison to direct computation.

7. Applicants assert on page 16, regarding claim 8 (and any claim that includes the same or similar limitation):

> "Applicants submit that it is not common knowledge or well known in the art to provide a method of artifact rejection

> as claimed, wherein each of the plurality of noise and signal buffers respectively comprise eight buffers.

Examiner respectfully submitted evidence which is taught by John G. Proakis and Dimitris G. Manolakij in "Digital Signal Processing, Third Edition, Printice-Hall, New Jersey, 1996". As shown in Figure 6.8, page 462, John G. Proakis and Dimitris G. Manolakij taught eight buffers (memory for x(0) to x(7)) in the calculation.

8. Applicants assert on page 16, regarding claim 11 (and any claim that includes the same or similar limitation):

> "Applicants submit that it is not common knowledge or well known in the art to provide a method of artifact rejection as claimed, wherein splitting the signal into a noise component and a signal component comprises taking the discrete Fourier transform of the signal, and wherein seven different frequencies are employed."

As presented above in the Office Action, and for further clarification, it would have been obvious to try since there are a number of identified, predictable solutions (set of frequency bands; col. 10, lines 52- 62) to the recognized need. The motivation if from Marash in column 3, lines 38-39.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CON P. TRAN whose telephone number is (571)272-7532. The examiner can normally be reached on M - F (08:30 AM - 05:00 PM).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor VIVIAN C. CHIN can be reached on 571-272-7848. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/CPT/
May 17, 2008

/Vivian Chin/

Supervisory Patent Examiner, Art Unit 2615